

ABSTRACT

A shape memory polyurethane or polyurethane-urea polymer including a reaction product of: (A) (a) silicon-based macrodiol, silicon-based macrodiamine and/or polyether of the formula (I): $A-[(CH_2)_m-O]_n-(CH_2)_m-A'$, wherein A and A' are endcapping groups; m is an integer of 6 or more; and n is an integer of 1 or greater; (b) a diisocyanate; and (c) a chain extender; or (B) (b) a diisocyanate; and (c) a chain extender, said polymer having a glass transition temperature which enables the polymer to be formed into a first shape at a temperature higher than the glass transition 5 temperature and maintained in said first shape when the polymer is cooled to a temperature lower than the glass transition temperature, said polymer then being capable of resuming its original shape on heating to a temperature higher than the glass transition temperature. The present invention also relates to a shape memory composition which includes a blend of two or more of the shape memory polyurethane or polyurethane-urea polymers defined above or at least one shape memory polyurethane or polyurethane-urea polymer defined above in combination with another material. The present invention further relates to processes for preparing materials having improved mechanical properties, clarity, processability, biostability and/or degradation resistance and devices or articles containing the shape memory 15 polyurethane or polyurethane-urea polymer and/or composition defined above. 20